

1W isolated DC-DC converter

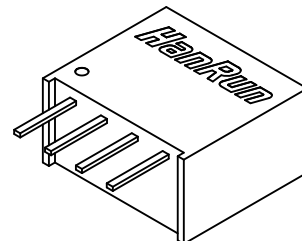
Fixed input voltage, unregulated single output



H5024001EA

Features :

I/O isolation test voltage: 3KVDC
No-load input current as low as 8mA
Continuous short-circuit protection
High efficiency up to 88%
Capacitive Load: 2400 μ F Max.
Industry standard pin-out
Operating ambient temperature range: -40°C to $+105^{\circ}\text{C}$
Designed to Comply with EN 62368-1, IEC 62368-1



This model is specially designed for applications where an isolated voltage is required in a distributed power supply system. It is suitable for: pure digital circuits, low frequency analog circuits, relay-driven circuits and data switching circuits.

Input Specifications					
Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	DC Input	4.5	5	5.5	V
Input Current	Vin=5VDC, Io=0mA	—	8	10	mA
Input Current	Vin=5VDC, Io=200mA	—	230	243	mA
Reflected Ripple Current					
Surge Voltage (1sec. max.)	DC Input	−0.3	—	9	V
Input Filter		Capacitance filter			
Hot Plug		Unavailable			
Output Specifications					
Item	Operating Conditions	Min.	Typ.	Max.	Unit
DC Output Current	Nominal Input Voltage	20	—	200	mA
DC Output Voltage	Vin=5VDC, Io=200mA	—	5	—	VDC
Ouput Voltage Accuracy	See output regulation curves (Fig. 1)				
Line Regulation	Input voltage change: ±1%	—	—	1.2	—
Load Regulation	5VDC input,10%–100% load	—	10	15	%
Temperature Coefficient	Full load	—	±0.02	—	%/°C
Ripple & Noise	20MHz bandwidth (parallel cable method)	—	50	75	mVp–p
Short circuit Protection	Continuous, self–recovery				
Note:* The “parallel cable” method is used for Ripple and Noise test.					

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General Specifications					
Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Input to output, test for 1 second with 1 mA Max	3000	—	—	VDC
Insulation Resistance	Input to output, at 500VDC	1000	—	—	Mohm
Isolation capacitor	Input to output, 100KHz 0.1V	—	20	—	pF
Operating Temperature	Derating when operating temperature $\geq 85^{\circ}\text{C}$, (see Fig. 2)	-40	—	+105	$^{\circ}\text{C}$
Storage Temperature		-55	—	+125	$^{\circ}\text{C}$
Storage Humidity	Non-condensing	5	—	95	%
Case Temperature Rise	Ta=25 $^{\circ}\text{C}$, nominal input voltage, full load	—	25	—	$^{\circ}\text{C}$
Switching Frequency	full load, nominal input voltage	—	360	—	KHz
Efficiency	5V Input, Full load	82	87	—	%
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10s seconds	—	—	300	$^{\circ}\text{C}$
Capacitive Load	Input to output	—	—	2400	μF
Safety Standard	Safety Standard	EN 62368-1, IEC 62368-1			
MTBF	MIL-HDBK-217F@25 $^{\circ}\text{C}$	3500	—	—	Khours

Physical Specifications	
Casing Material	Black plastic; flame-retardant and heat-resistant (UL94 V-0)
Epoxy	Black, UL94 V-0
Dimensions	11.60 x 6.00 x 10.16 mm
Weight	1.3g (typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)		
Emissions	CE	CISPR32/EN55032 CLASS B (see Fig.6 for recommended circuit)
	RE	CISPR32/EN55032 CLASS B (see Fig.6 for recommended circuit)
Immunity	ESD	IEC/EN61000-4-2 Air $\pm 8\text{kV}$, Contact $\pm 6\text{kV}$ perf. Criteria B

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Typical Characteristic Curve:

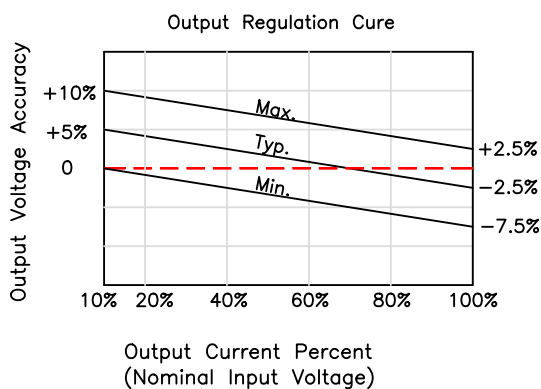


Fig. 1

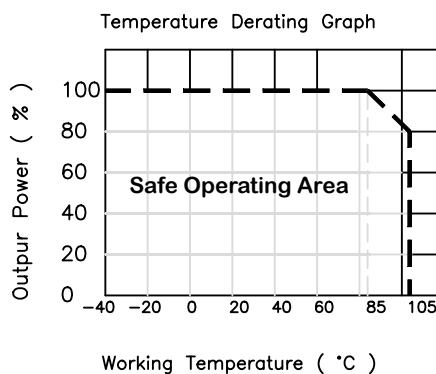


Fig.2

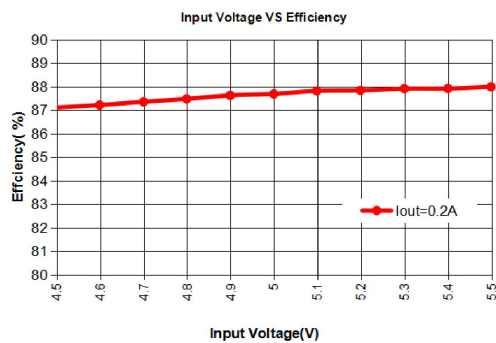


Fig. 3

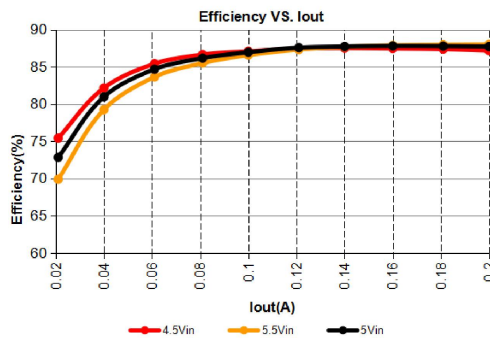


Fig. 4

1W isolated DC-DC converter

Fixed input voltage, unregulated single output

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Design Reference:

1. Typical application

Input and/or output ripple can be further reduced, by connecting a filter capacitor from the input and/or output terminals to ground as shown in Fig.5.

Choosing suitable filter capacitor values is very important for a smooth operation of the modules, particularly to avoid start-up problems caused by capacitor values that are too high.

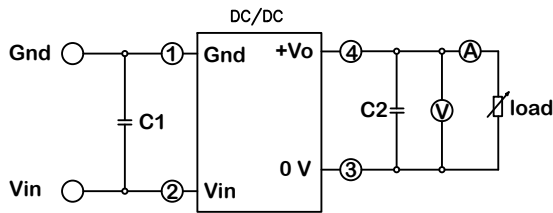


Fig. 5

Note : C1 :4.7uF/16V (low internal resistance)
C2 :10uF/16V (low internal resistance)

2. EMC typical recommended circuit

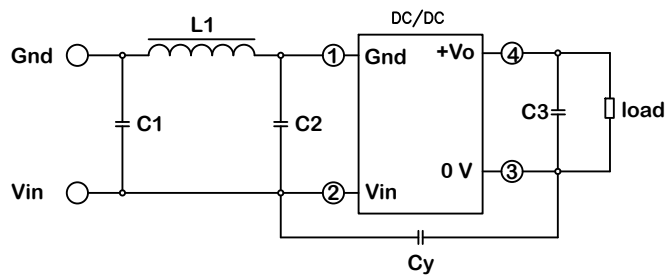
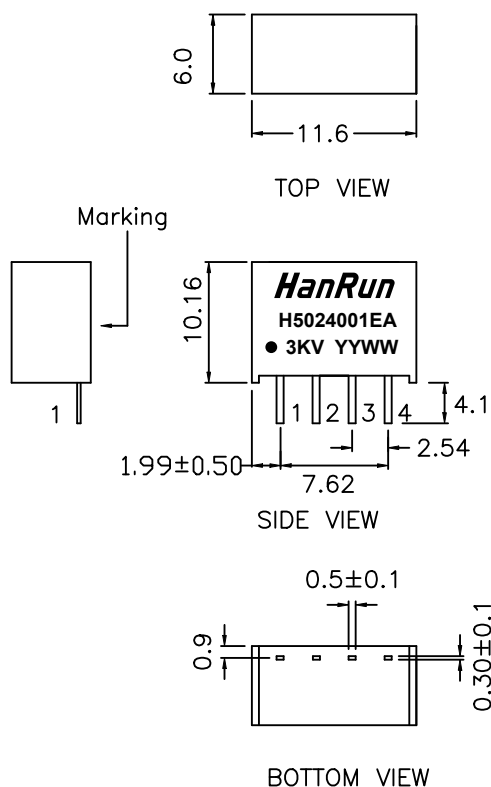
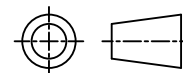


Fig.6

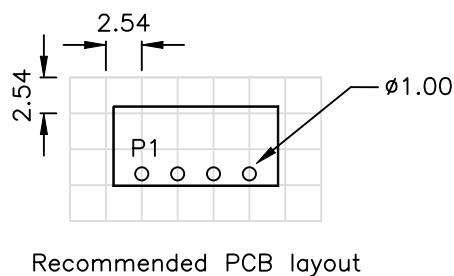
Note :
C1,C2: 4.7uF/16V
C3: 10uF/16V
L1: 6.8uH
Cy: 100pF/4000V

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Dimensions and Recommended Layout:



Pin-out	
Pin	Mark
1	Gnd
2	Vin
3	OV
4	+Vo



Unit : mm
Unless otherwise specified,
Tolerance: .x ± 0.5 , .xx ± 0.25